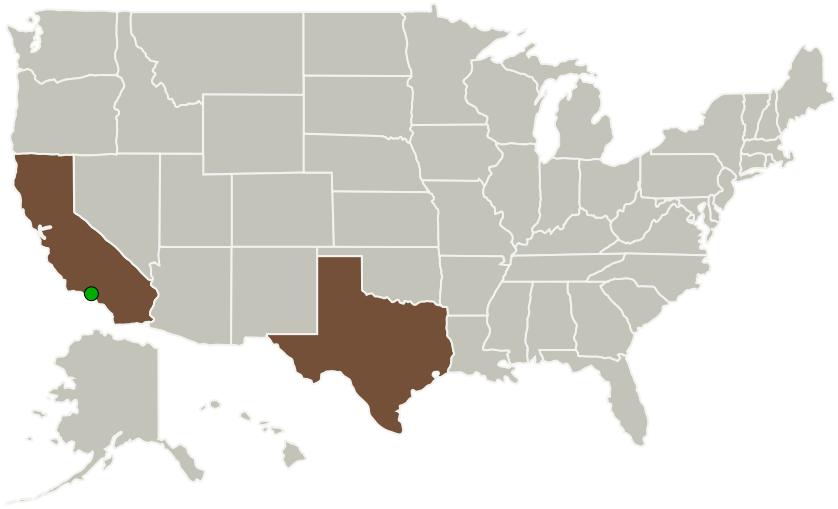
Wind Measurement LIDAR, Phase I

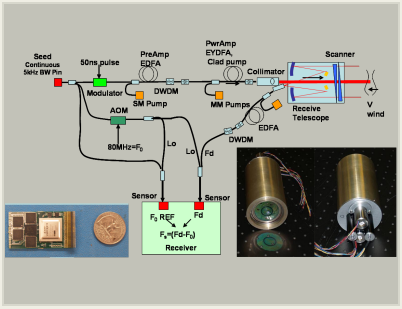
Completed Technology Project (2014 - 2014)

Project Introduction

Systems & Processes Engineering Corporation (SPEC) proposes a Wind Measurement LIDAR whose sensor assembly is composed of SPEC Gen IV LIDAR seeker, with 12.8 Mpps imaging rate, modified with a laser with ultra-narrow band seed, AOM and modulator, to allow air current Doppler detection beyond 3km. The sensor output is Doppler shift in 3D pixels (voxels) in a 90 degree cone. The specifications were sized to detect energy sources are vertical uplifts, wind direction, wind gradients and transient gusts for optimal path determination for energy conservation in UAVs with less than 1mps accuracy at 10Hz sampling. The Gen IV LIDAR is the latest member of SPEC's family of LIDARs and features 2 inch aperture, 10km range in clear air, range accuracy of 3mm at close range 30mm at acquisition range, and deep waveform capture capability. The LIDAR can use scanner with fields of view from 30 to 90 degrees, and features pipeline processing for real time image output. In the fully miniaturized version the unit is 3.5 inches diameter by 8.5 inches long. The Doppler modifications would increase this length by 1 inch.

Primary U.S. Work Locations and Key Partners





Wind Measurement LIDAR Project Image

Table of Contents

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
Systems & Processes Engineering Corporation	Lead Organization	Industry Veteran-Owned Small Business (VOSB)	Austin, Texas
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	Texas

Project Transitions

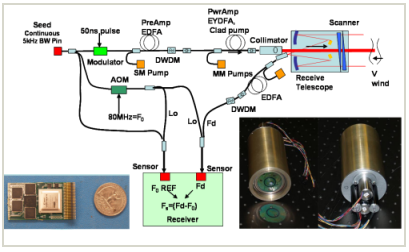
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137613)*

Images



Project Image
Wind Measurement LIDAR Project Image
(https://techport.nasa.gov/image/135325)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Systems & Processes Engineering Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

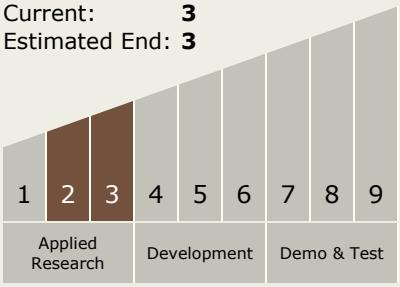
Carlos Torrez

Principal Investigator:

Brad Sallee

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System